

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended). A device to synthesize a range of frequencies F1-F2 with high spectral purity, comprising:

a ~~synthesizer with a variable step~~ variable-step synthesizer providing a range of frequencies F3-F4, Na; having a

a variable ratio ~~rank~~ divider Nb ~~located after said synthesizer; and~~

a frequency control device adapted for delivering a division rank command of the variable ~~rank~~ ratio divider, a command of the frequency of the variable-step synthesizer, and a command of a synthesis step of the variable-step synthesizer,

wherein the length of the cycle of evolution of Na is variable and dependent on the value of Nb, the variable-step synthesizer is a fractional step phase-locked loop synthesizer.

2. (currently amended). The device according to claim 1 comprising a filtering device positioned after the variable ratio divider ~~variable-rank device~~ Nb.

Claim 3 (cancelled).

4. (currently amended). The device according to claim 1 wherein the variable ratio ~~variable-rank~~ divider Nb is a value from N1 to Np, the values N1 to Np follow an arithmetic progression, and wherein the maximum frequency of the synthesizer is given by $F4=N1 \cdot F2$ where N1 is the smallest value of the sequence of values N1 to Np and the frequency F3 is a function of N2.

5. (previously presented). The device according to claim 4 wherein the value of the frequency F3 is substantially equal to or slightly lower than $(N1/N2) \cdot F4$.

6. (currently amended). The device according to claim 1 wherein the variable ratio ~~variable-rank~~ divider Nb is a value from N1 to Np, the values N1 to Np following a non-arithmetic progression.

7. (previously presented). The device according to claim 6 wherein F3 is substantially equal to or smaller than a F4 where a is the smallest value obtained in dividing two consecutive values one after the other.

8. (previously presented). The device according to claim 6 wherein the highest division rank Nb is chosen.

9. (previously presented). The device according to claim 1 comprising a mixer receiving an output signal from a fractional step synthesizer and a mixing signal.

10. (currently amended). A method of synthesizing a range of frequencies F1-F2 with high spectral purity using a voltage controlled oscillator, a frequency source which comprises the steps of ~~variable step range of frequencies F3-F4, comprising:~~

~~transmitting~~ dividing the output signal of the voltage controlled oscillator by a first value ~~variable step synthesizer to a multiple-rank divider Nb~~ [[Np]], and;

dividing the input signal of the voltage controlled by a second value Na,

wherein the length of the cycle of evolution of Na is variable and dependent on the value of Nb ~~modifying a division rank, a synthesis step of the synthesizer and a frequency of the variable step synthesizer responsive to receipt of the output signal.~~

11. (currently amended). The method according to claim 10 wherein the value of ~~values~~ Nb varies ~~vary~~ according to an arithmetic sequence N1...Np and wherein the frequency F4 is determined by $N1 \cdot F2$ and the frequency F3 is a function of N2.

12. (previously presented). The method according to claim 11 wherein the value of the frequency F3 is chosen to be substantially equal to or slightly below $(N1/N2) \cdot F4$.

13. (currently amended). The method according to claim 10 wherein the value of N_b varies according to a non-arithmetic sequence and wherein two consecutive values of the sequence are divided.

14. (previously presented). The method according to claim 13 wherein F_3 is substantially equal to or smaller than a F_4 where a is the smallest value obtained in dividing two consecutive values of the sequence.

15. (previously presented). The method according to claim 14 wherein the highest division rank N_b is chosen.

16. (previously presented). The method according to claim 10, wherein the modification of the division rank and the synthesis step is simultaneous.

17. (previously presented). The method according to claim 1, wherein a ratio of a reference frequency to the frequency step, is a least common multiple of the sequence $N_1 \dots N_p$.

18. (new) The device according to claim 1 wherein reference frequency F_{ref} is chosen so that the desired fractional step values are obtained.

19. (new) The method according to claim 10 wherein the reference frequency F_{ref} is chosen so that the desired fractional step values are obtained as F_{ref} is a function of sequence of the values $N_1, N_2, \dots N_p$ assumed by N_b .

20. (new) The method according to claim 10 wherein the reference frequency F_{ref} is chosen so that the desired fractional step values are obtained as follows $F_{ref}/\Delta F$ must be a multiple of the LCM of $N_1, N_2, \dots N_p$ with ΔF a given frequency step.